



# PATENT SPECIFICATION

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Inventor: WILFRID EDWARD WALTER NICOLLS

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## COMPLETE SPECIFICATION

### A Lubrication and Fuel Oil System for Internal Combustion Engines

We, C.A.V. LIMITED, of Warple Way, Acton, London, W.3, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

A conventional method of lubricating an internal combustion engine comprises the provision of an oil reservoir, or so-called sump, in the crank-shaft housing of the engine. In the course of time the oil in this reservoir becomes fouled by repeated use, and periodic replenishment is required, the discarded oil being usually wasted.

The modern development of lubricating oils of low viscosity has reached the stage in which such oils are essentially similar in character to fuel oils and can be used for either purpose.

It has already been proposed to employ in an internal combustion engine, a lubricating oil and fuel oil system of a kind in which oil supplied from a storage tank to the lubricant-oil reservoir of the engine, is withdrawn therefrom by a pump for supplying the engine with oil to be used as fuel.

The object of the present invention is to provide an improved system of the said kind, and the invention comprises a system of the kind above specified which includes two pipes having their inlet ends at different levels in the lubricating-oil reservoir of the engine, and a pump in each such pipe, the pipe having its inlet at the higher level serving to supply to the engine the oil required as fuel, and the other serving to supply to the engine the oil required as lubricant.

In the accompanying drawings, Figures 1—3 illustrate three typical embodiments of the invention.

Referring to Figure 1, an oil storage tank *a* is provided in communication with the lubricating oil reservoir or sump *b*, of the engine *c*. Some of the oil is withdrawn from the sump by a feed pump *d* for supplying it through a filter *e* and a fuel injection pump *f* to the engine as fuel oil.

If desired a valve *g* operated by a float *h* or other equivalent means may be provided in a sub-chamber *i* on the sump for regulat-

ing the flow of oil from the tank so as to maintain a constant oil level in the sump. Moreover, the inlet end of the pipe *j* which supplies the feed pump *d* is so arranged that a sufficient quantity of oil is at all times held in the sump to maintain adequate lubrication of the engine. The oil required for lubricating the engine is supplied by a pipe *k* and a pump *m*, the inlet end of this pipe being situated near the bottom of the sump.

In the arrangement shown in Figure 1, the tank *a* is situated at a level from which the oil can flow into the sub-chamber *i* by gravity. When it is required to mount the tank at a lower position, the arrangement shown in Figure 2 is used. In this arrangement, oil is supplied from the tank by a pump *n*. In combination with the pump is provided a bypass *o* containing a spring-loaded relief valve *p* which allows liquid to circulate idly around the pump when the valve *g* is closed.

In the arrangement shown in Figure 3, oil is fed directly to the sump *b* from a tank *a* situated at a lower level than the sump by a pump *q*, the float-controlled valve shown in Figures 1 and 2 being not provided in this arrangement. Oil is returned from the sump to the tank by an overflow pipe *r* which determines the upper level of the oil in the sump. Otherwise the arrangement is similar to the others above described.

What we claim is:—

1. A system of the kind specified in which the same oil is used in an internal combustion engine both as a lubricant and as fuel, which includes two pipes having their inlet ends at different levels in the lubricating oil reservoir of the engine, and a pump in each such pipe, the pipe having its inlet at the higher level serving to supply to the engine the oil required as fuel, and the other serving to supply to the engine the oil required as lubricant.

2. A system as claimed in Claim 1, in which the oil is supplied from the tank to the reservoir in the engine through a float-controlled valve.

3. A system as claimed in Claim 1, in which oil is circulated between the tank and the reservoir in the engine by a pump and a return overflow pipe.

4. A system of the kind specified in which the same oil is used in an internal combustion engine both as a lubricant and as fuel, comprising the combination and arrangement

of parts substantially as described and as illustrated by Figure 1, 2 or 3 of the accompanying drawings.

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#### PROVISIONAL SPECIFICATION

### A Lubrication and Fuel Oil System for Internal Combustion Engines

10 We, C.A.V. LIMITED, of Warple Way, Acton, London, W.3, a British Company, do hereby declare this invention to be described in the following statement:—

15 A conventional method of lubricating an internal combustion engine comprises the provision of an oil reservoir, or so-called sump in the crank-shaft housing of the engine. In the course of time the oil in this reservoir becomes fouled by repeated use, and periodic replenishment is required, the discarded oil being usually wasted.

20 The modern developments of lubricating oils of low viscosity has reached the stage in which such oils are essentially similar in character to fuel oils and can be used for either purpose.

25 The object of the present invention is to enable such oils to be used for lubricating purposes in a more satisfactory manner than by the conventional method above mentioned, and the invention consists of a system in which oil is supplied from a storage tank to the lubricant-oil reservoir of the engine, and is continuously withdrawn therefrom by a pump for supplying the engine with the re-

quired fuel oil.

35 In one manner of carrying the invention into effect, an oil storage tank is provided in communication with the lubricating oil reservoir or sump, of the engine. Some of the oil is withdrawn from the sump by a pumping means for supplying it to the engine as fuel 40 oil. The said means may include a feed pump which supplies an injection pump, the latter serving to deliver the oil to the engine cylinders.

45 If desired a float-valve or other equivalent means may be provided for regulating the flow of oil from the tank so as to maintain a constant oil level in the sump. Moreover, the pipe which supplies the pumping means is so arranged that a sufficient quantity of oil is at 50 all times held in the sump to maintain adequate lubrication of the engine.

55 By this invention a continuous flow of oil through the sump is obtained, and the content of the sump is constantly renewed, thus avoiding fouling and wastage of the lubricating oil and enabling a desirable economy to be effected on the use of the oil.

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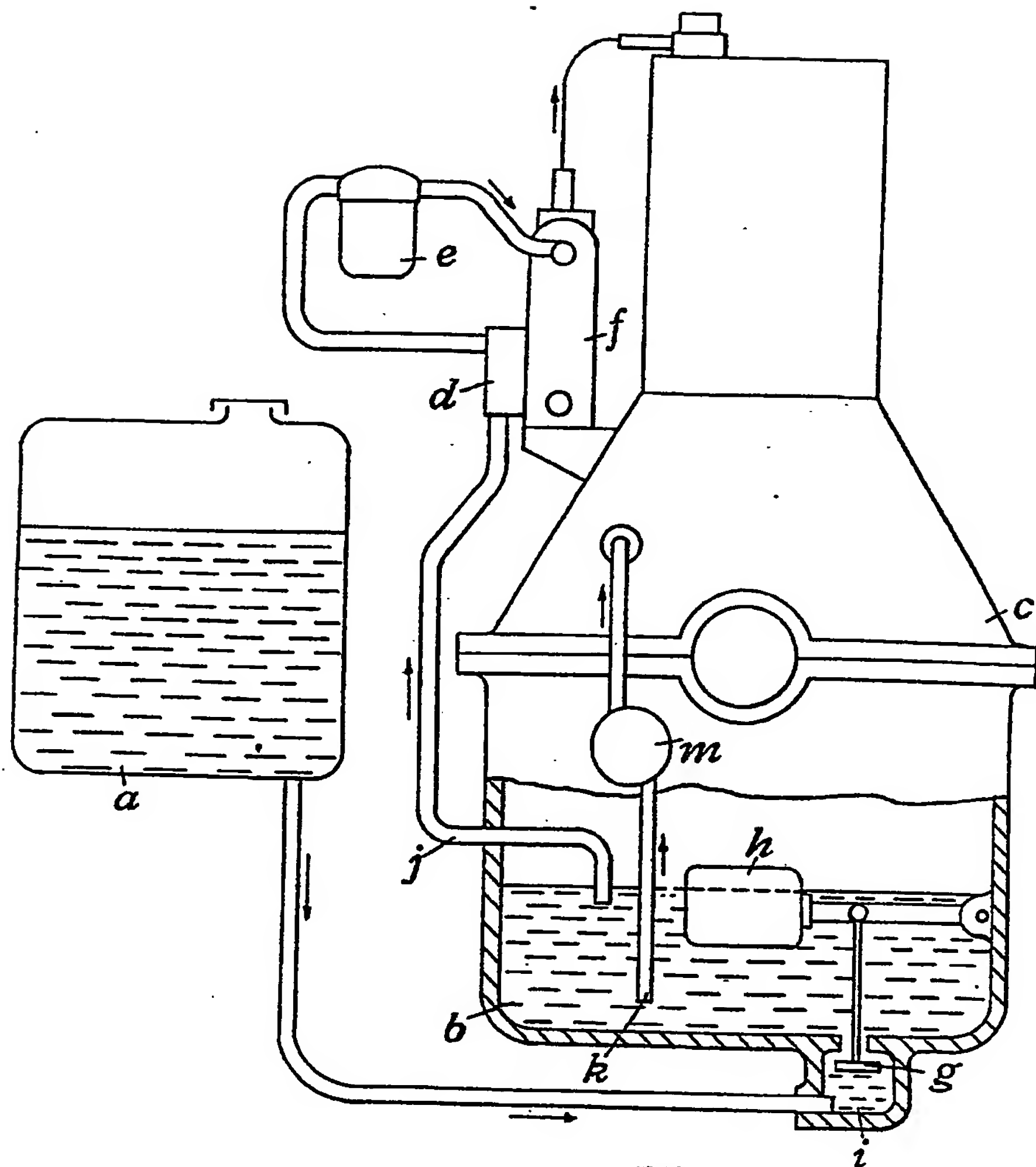
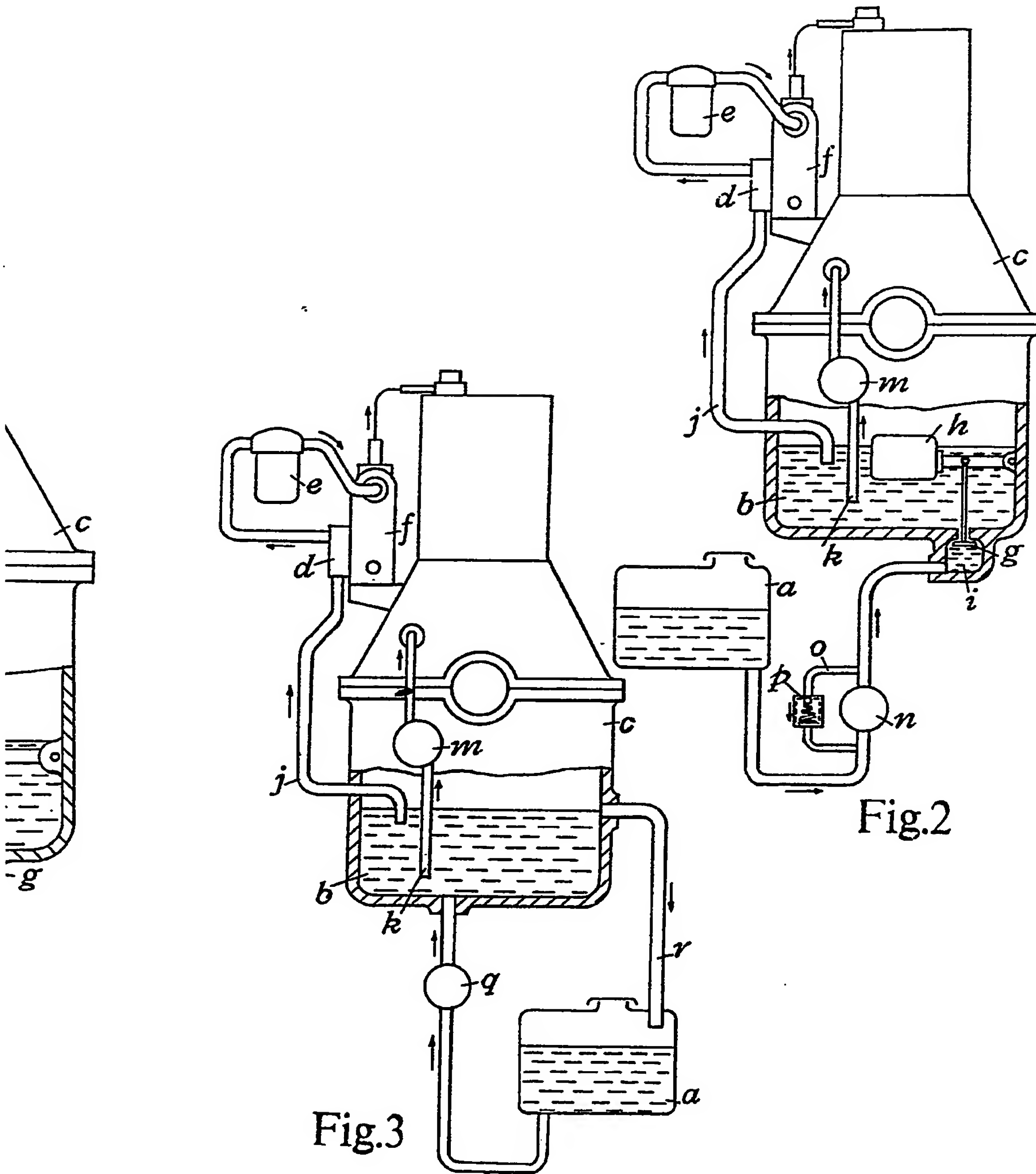


Fig. 1



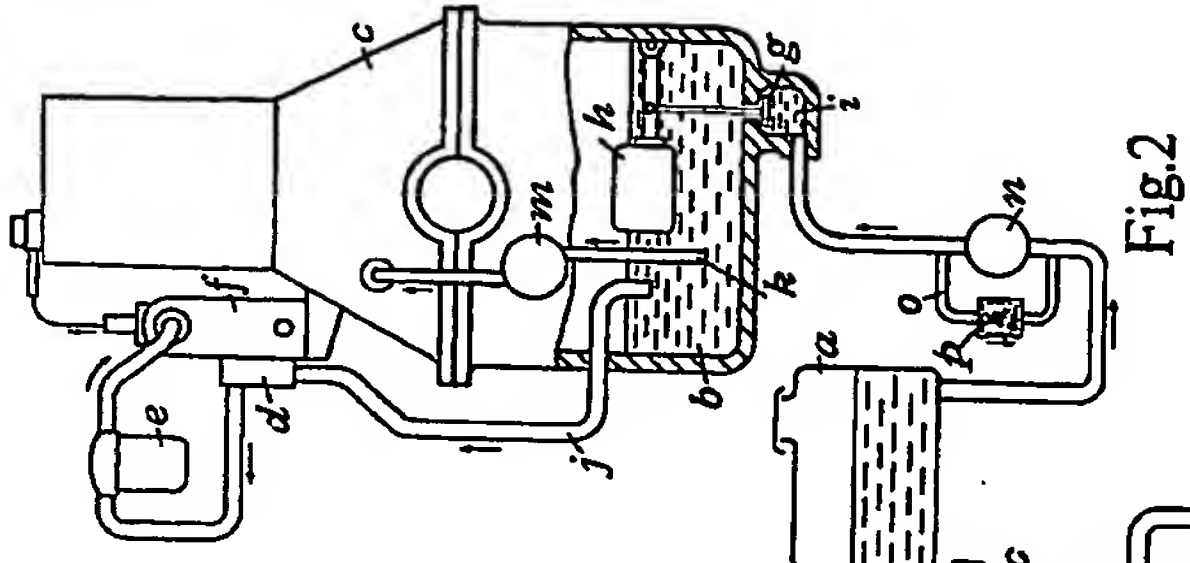


Fig. 1

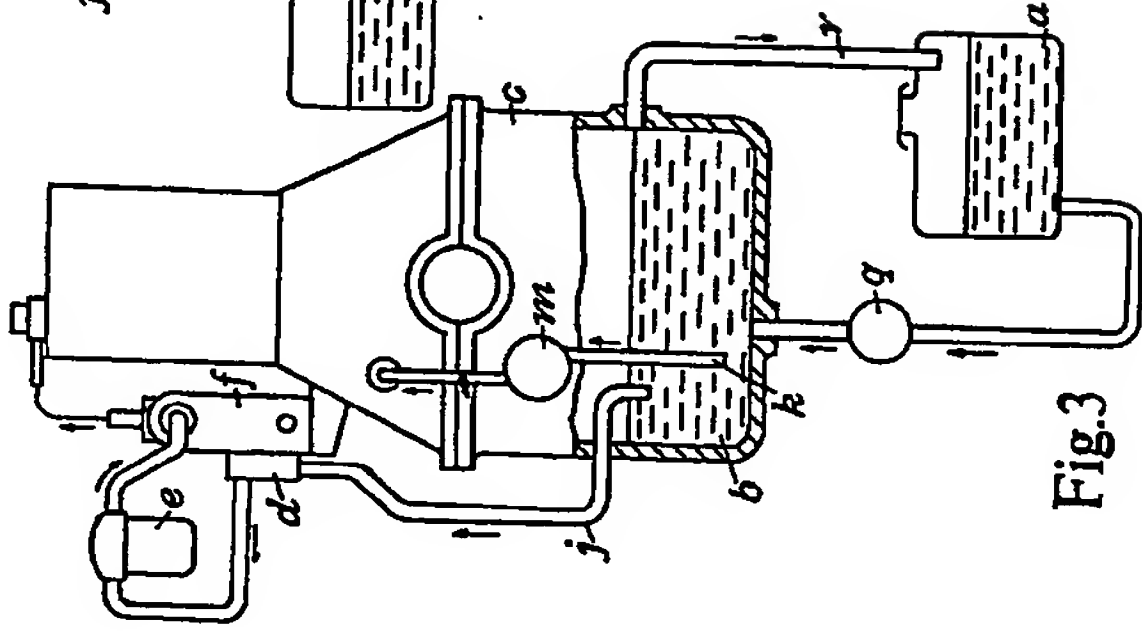


Fig. 2

Fig. 3

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